Missouri Department of Transportation

Bridge Division

Bridge Design Manual

Section 5.2

Revised 02/28/2003

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Division of Bridges
Office Practice No. 1

May 24, 1999

Subject: Implementation of the 1998 Interim AASHTO Standard Specifications for highway bridges.

Implementation recommendations are given on the following sheets.

Plans should be marked "Design Specifications: AASHTO -1996 and Interims thru 1998" beginning with projects in September 1999 Letting.

IMPLEMENTATION OF 1998
AASHTO INTERIM SPECIFICATIONS FOR BRIDGES

The following is MoDOT's policy on implementation of the 1998 AASHTO Interim Specifications for highway bridges. Major river bridge crossings may be independent of MoDOT's policy. See Structural Liaison Engineers.

Article	Description	Recommendation
DIVISION I		
SECTION 3	*LOADS*	
3.22.3	Combination of Loads	Implement. Typographical errors in article number for footnotes.
SECTION 4	*FOUNDATIONS*	
4.4.7.2.2	Elastic Settlement	Corrected spelling of the word, Boussinesq.
4.12.3.2	Movement Under Serviceability Limit State	Do not implement. New Figure 4.12.3.2.1-1 has been added. We do not design for settlements in new bridges. This may be applicable to the analysis of an existing bridge that experienced problems due to settlements.
SECTION 5	*RETAINING WALLS*	
5.40	Notations	Implement. Corrected article number for two definitions and add two new definitions for MSE walls.
5.60	Nongravity Cantilever...	Implement. Corrected typographical error in Figure 5.6.2A for Pp.
5.8.2	External Stability	Implement. Added complex wall requirements for steep slopes requiring check of compound failure surfaces.
5.8.4.1	Calculation of Maximum...	Insert. Preferred method is Simplified Coherent Gravity approach. Any other method should be approved on a case by case basis.
5.8.4.2	Determination of Reinf...	Implement. Changes required reinforcement connection load, To, to Tmax instead of a percentage of Tmax. Adds safety due to uncertainty in actual compaction at wall face.
5.8.5.1	Location of Zone of	No change. Moved Figure 5.8.5.1A from one page to another and moved text around.

Article	Description	Recommendation
5.8.5.2	Soil Reinforcement...	Implement. Added Table 5.8.5.2A for default values for scale effect correction factors.
5.8.6	Reinforcement Strength....	Implement. Redefined Rc in Figure 5.8.6A
5.8.6.1.1	Steel Reinforcement	Implement. Corrected typographical error.
5.8.6.1.2	Geosynthetic Reinf....	Implement. Changed design method from single default reduction factor to minimum values for RF_{ID} and RF_D in both text and in Table 5.8.6.1.2B. Changed testing methods added a new GG8 for polyester geosynthetics in Table 5.8.6.1.2A.
5.8.6.2.1	Steel Reinforcements	Implement. Added AASHTO test specs.
5.8.6.2.2	Geosynthetic Reinf...	Implement. Provides extra factor of safety for unknowns in creep degradation to make FS = 1.8. If accurate creep data is available F.S. may be between 1.5 and 1.8 but no less than 1.5.
5.8.7.2	Connection Strength	Implement. Follows FHWA guidelines for geosynthetic connection strength. Modified code to account for changes in RF_{ID} and RF_D. Added point page 152.6-1 to allow for carryover text. Added modifications to Table 5.8.7.2A.
5.8.8.2	Design of Flexible....	Implement. Clarified spacing to be vertical spacing of reinforcement.
5.8.9	Seismic Design	Implement. Clarifies current seismic design procedure which does not account for lateral deformation which should be investigated in SPC D. Note that we do not design MSE wall but review manufacture's design in which this criteria shall be included.
5.8.9.1	External Stability	Implement. Changes criteria so that Am is always >= A when A > 0.45g.
5.8.9.2	Internal Stability	Implement. Text and figures moved around. Modified Figure 5.8.9.2A. Added two new equations for static and dynamic components of reinforcement rupture. Renumbered Eqn. 5.8.9.2-4 and added three new eqn. for Tult for ultimate strength of geosynthetics.

Article	Description	Recommendation
5.8.9.3	Facing/Soil Reinforcement	Implement. Changed requirements for connection strength T_{total}. Moved carryover text and figures to different pages. Added two new eqns. for Tmax and Tmd. Please note that $CR_1 = CR_s$.
5.8.12.2	Traffic Loads and Barriers	Implement. Defines static and transient barrier curb loads. Clarifies $F.S._{ot}$ and $F.S_{sl}$ in Figure 5.8.12.1C.
5.90	Prefabricated Modular...	Implement. AASHTO previously removed this article but has been reinstated. MoDOT had retained this article for reference, the retained pages can now be removed.
5.10-5.14	Part C, Strength Design	Insert. AASHTO previously removed these articles but have reinstated them. MoDOT had retained these articles for reference, the retained pages can now be removed.
Commentary	Retaining Walls	Implement all commentary for retaining walls
SECTION 9	*Prestressed Concrete*	
9.18.1	Maximum Prestressing Steel	Implement. There are some minor typographical corrections in Equations (9-20), (9-21) and (9-22).
9.18.2	Minimum Steel	Implement. There are some minor wording changes in 9.18.2.1. Renumbered current Article 9.18.2.2 as Article 9.18.2.3. Added a new Article 9.18.2.2 to specify that minimum steel requirement may be waived if the provided steel area is at least one-third greater than that required by analysis.
9.20.3	Shear Strength Provided by Web Reinforcement	Insert. Please notice that a square root (√) shall be added over f'c in Article 9.20.3.2. It shall be read as: When V_s exceeds $4\sqrt{f'_c}$ b'd, this maximum spacing shall be reduced by one-half.
SECTION 10	*Structural Steel*	
10.36	Combined Stresses	Implement. Typographical correction in Equation (10-42).

Article	Description	Recommendation
SECTION 13	*Wood Structures*	
13.1, 13.2, 13.5, 13.6, 13.7		Implement. Updated with 1993 Edition of the American Institute of Timber Construction, AITC 117-93 Design and corrected typographical errors.
SECTION 14	*BEARINGS*	
14.5	General Requirements for Bearings	Implement. Using different types of *fixed or moveable* bearings at the same expansion joint should not be used unless the effects of different deflection and rotation characteristics on bearings shall be considered in the design. (Note: For new bridges, we do not mix different types of bearings. However, we sometimes mix neoprene bearings with the existing type D or C steel bearings for bridge widening projects.)
14.6.1.1	Metal Rocker and Roller Bearings-General design consideration	Correction. Deleted the second paragraph and moved it to Article 14.5.
14.6.1.2	Metal Rocker and Roller Bearings-Materials	Implement. Added ASTM equivalent material properties along with AASHTO.
14.6.2.1	PTFE Surface	Implement. Corrected typographical error of ASTM D1457 to D4547.
14.6.2.5	Coefficient of Friction (PTFE)	Implement. Typographical error, AASHTO uses the term "Section" instead of "Chapter". Added dimpled unlubricated PTFE in Table 14.6.2.5-1.
14.6.3.2	Resistance to Lateral Load (PTFE)	Implement. Typographical errors, Terms (L/2R) and (Hm/Pd) in Equations 14.6.3.2-3 and 4 shall be replaced with (Hm/Pd) and (L/2R), respectively. Implement. A new Figure 14.6.3.2-1 is added to help identifying notations.
14.6.4.2	Pot Bearing-Materials	Implement. Added ASTM equivalent material property along with AASHTO.
14.6.4.4	Pot Bearing-Elastomeric Disc	Implement. Thin PTFE disc at top and bottom of the elastomer may be used to accommodate rotations in Pot Bearing.

Article	Description	Recommendation
14.6.5	Steel Reinforced Elastomeric Bearing- Method B	Insert, but do not implement. The title is revised to indicate that it is Method B. See Implementation of 1997, AASHTO Interim Specifications for Highway Bridges for the reason why we are not implementing.
14.6.6	Elastomeric Pads and Steel Reinforced Elastomeric Bearings-Method A	Insert, but do not implement until the bridge manual has been revised in the near future. Currently a summer intern student is working on bearing design using AASHTO new design code. The title is revised to indicate that it is Method A. See Implementation of 1997, AASHTO Interim Specifications for Highway Bridges for the reason why we are not implementing.
14.6.7.1	Bronze or Copper Alloy Sliding Surfaces - Materials	Implement. Added ASTM equivalent material property along with AASHTO.
14.6.8.2	Disc Bearing - Materials	Implement. Added ASTM equivalent material property along with AASHTO.
14.6.8.5	Disc Bearing - Shear Resisting Mechanism	Implement. Typographical error, AASHTO uses the term "Article" instead of "Section" when a subtitle is used under a main section title.
14.6.9.3	Guides and Restraints - Materials	Implement. Added ASTM equivalent material property along with AASHTO.
14.7.3	Load Plates and Anchorage for Bearings - Anchorage	Implement. A separation of bearing components due to a lateral force is not allowed for any types of bearings.
14.8	Corrosion Protection	Implement. Hot-dip galvanizing coating option is added for a corrosion protection.
SECTION 17	*SOIL-REINFORCED CONCRETE STRUCTURE INTERACTION SYSTEMS*	
17.5.3.4	Splices of Reinforcement	Implement. Splice of reinforcement shall be in conformity with Article 8.32.1.1.
SECTION 18	*Soil-Thermoplastic Pipe Interaction Systems*	

Article	Description	Recommendation
18.4	Plastic Pipe	Implement. This 1998 Interim made some minor wording changes in 18.4.1.2 and 18.4.1.3 and added the 42" and 48" diameter pipes to Table 18.4.2.1. Please correct "MPG-95" as "MP6-95" in the Title of Table 18.4.2.1.
DIVISION I-A		
4.3	Uniform Load Method(Procedure -1)	Implement. In the second paragraph, correct figure number.
7.4.5	Additional Requirements for Abut. for SPC D	Implement. In the second paragraph, "Settlement or approach slabs ...shall be provided..." has been changed to "Settlement or approach slabs...are recommended...". This change was originally proposed by Alaska DOT that Individual State DOTs should make their own decisions whether they want to use approach slabs or not. MoDOT policy is to use approach slab.
COMMENTARY	Seismic Design	Implement all articles except as noted.
C4.3	Uniform Load Method(Procedure-1)	Do not implement. MoDOT's practice is to use multimode spectral analysis method (Procedure -3) for both regular and non-regular bridges.
C4.4	Single Mode Spectral Analysis (Procedure-2)	Do not implement. MoDOT's practice is to use multimode spectral analysis method (Procedure -3) for both regular and non-regular bridges.
C4.5.4	Multimode Spectral Analysis	The variable $\underline{B}$ is previously defined as "a vector containing ones and zeros corresponding to those components in the direction of ground excitation Ag(t) and those components in the other orthogonal directions, respectively". This definition of $\underline{B}$ is not quite right. The definition of $\underline{B}$ has been revised in this interim to an "influence coefficient vector" containing a value between –1 and +1" for individual degrees-of-freedom. This revision was requested by MoDOT, Bridge Division, at the 1998 AASHTO annual meeting.

Article	Description	Recommendation
C7.2.2	Forces Resulting from Plastic Hinging in Columns, Piers, or Bents	(1) Increase in reinforcement strength: steel grade 60 (fy=60 ksi) is normally specified for seismic design. The permissible range for yield strength is 60 ksi $\leq fy \leq$ 78 ksi. Thus the upper limit is about 30% higher than the specified design value. Combining this increase with the effect of strain hardening, it is realistic to assume an increased yield strength of 1.25fy when computing the column overstrength. Do not implement, see item (4) below. (2) Increase in concrete strength: Concrete continues to gain strength after 28 days with strength gain in the first year typically being about 20% above the 28-day strength. After 30 years, the compression strength often exceeds the specified strength by 100% or more. Concrete compression strength is further enhanced by passive confinement provided to plastic hinge regions by transverse reinforcement. Therefore an increased concrete strength of 1.5f'c could be assumed in the calculation of column overstrength capacity. Do not implement, see item (4) below. (3) Ultimate compressive strain (ε_c): For confined concrete, the use of extreme fiber compression strain of 0.003 for flexural strength calculations does not reflect ultimate conditions, when extreme fiber strain as high as 0.02 may develop. Therefore, assuming the ultimate compressive strain of 0.01 is a realistic value. Do not implement, see item (4) below. (4) Overstrength capacity: The actual column overstrength interaction curve (P-M curve) should be based on the realistic material as described in the above (1), (2), and (3) items. Due to our in-house computer program limitation, the curve shall be implemented where P_n and M_n are the nominal axial load and nominal moment capacities based on 1.0fy, 1.0f'c, and ε_c = 0.003. This curve is in good agreement with the shape of the actual curve based on 1.25fy, 1.5f'c, and ε_c = 0.01. Note that column overstrength capacity shall be used for the foundation design if column plastic hinging analysis is used.

Division of Bridges
Office Practice No. 1

July 27, 2000

Subject: Implementation of the 1999 Interim AASHTO Standard Specifications for Highway Bridges.

Implementation recommendations are given on the following sheets.

Plans should be marked "Design Specifications: AASHTO –1996 and Interims thru 1999" beginning with projects in February 2001 Letting.

IMPLEMENTATION OF 1999
AASHTO INTERIM SPECIFICATIONS FOR BRIDGES

The following is MoDOT's policy on implementation of the 1999 AASHTO Interim Specifications for highway bridges. Major river bridge crossings may be independent of MoDOT's policy. See Structural Liaison Engineers.

Article	Description	Recommendation
DIVISION I		
SECTION 3	*LOADS*	
3.12.1	Reduction in Load Intensity	Implement. Changed wording from requiring to allowing reductions in live load stresses for 3 or more traffic lanes.
3.12.2	Reduction in Load Intensity	Implement. This new section prohibits reduction in load intensity when using distribution factors to determine moments in longitudinal beams. This is the same as our current practice.
3.12.3	Reduction in Load Intensity	Implement. Previous section 3.12.2 moved to 3.12.3.
3.20.1	Earth Pressure	Implement. Changed text to read, "Coulomb's Equation". Previous text read, "Rankine's formula". The method referred to in Section 5 did not change, but the term "Coulomb's Equation" is more correct.
3.23.4.3	Precast Concrete Beams Used in Multi-Beam Decks	Implement. Revised calculation of load fraction and limited method to skews ≤ 45 degrees. These revisions correct discrepancies and inconsistencies with NCHRP Report 287.
	Distribution of Wheel Loads on Timber Flooring	
3.25.1.1 3.25.2.1 & 3.25.2.2	Transverse Flooring Longitudinal Flooring	Implement. Revision distributes the wheel load 10 inches in direction of traffic and 20 inches normal to traffic, allowing more than one plank to carry the wheel load. Based on research by University of Michigan & Forest Product Laboratory.
3.30	Tire Contact Area	Implement. Revision assumes Alternate Military & HS20 tire contact area to be a rectangle with length in direction of traffic of 10 inches and a width of 20 inches. Based on research by University of Michigan & Forest Product Laboratory.

Article	Description	Recommendation
SECTION 5	*RETAINING WALLS*	
5.3.3	Minimum Coverage	Implement. AASHTO revises bore hole spacing requirement from 200 ft. maximum to a recommended 100 ft. This may be increased or decreased to allow for anticipated geological conditions. MoDOT currently uses 25 ft. bore hole spacing for retaining walls.
5.4	Notations	Implement. Added notations for revisions to Article 5.8.7.2.
5.8.6.1.1	Steel Reinforcement	Implement. AASHTO defines criteria for non-aggressive soils formerly referenced in Division II, Article 7.3.6.3. However, Div. II states, additionally, that for epoxy coated steels, soils may be considered to be non-aggressive only if maximum particle size is limited to 0.75 in. This is not stated in Div. I.
5.8.6.1.2	Geosynthetic Reinforcement	Implement. AASHTO defines criteria for non-aggressive soil and effective design temperature formerly referenced in Division II, Article 7.3.6.3. Also, specifies that the pH range for permanent structures shall be 4.5 to 9 and changes pH range from 3-11 to 3-10 for temporary applications.
5.8.7.2	Connection Strength for Geosynthetic Reinforcements	Implement. Clarifies 1998 Interim Revision. Connection strength is based upon type of connection failure mode that controls, i.e. reinforcement rupture or reinforcement pullout.
5.8.12.2	Traffic Loads and Barriers	Implement. Clarifies impact load distribution to be used for designing upper layers of soil reinforcement for tensile capacity and pullout capacity.
SECTION 9	*PRESTRESSED CONCRETE*	
9.18.2.2	Minimum Steel:	Add a new Article 9.18.2.2 and rename current Article 9.18.2.2 to Article 9.18.2.3. However, this is a mistake by AASHTO because Article 9.18.2.2 is exact same as Article 9.18.2.3.
9.26.2.1	Minimum spacing of prestressing steel	Implement. This revision is consistent with the current AASHTO LRFD Specifications Article 5.10.3.3.1. Based on the new criteria, the minimum spacing of 2” for ½” strand is same as our current practice.

Article	Description	Recommendation
SECTION 10	*STRUCTURAL STEEL*	Do not implement the new design methodology as described in 1999 Interim because of the following: 1. Implementation would require extensive Bridge Manual revisions, i.e. splice tables and design examples. 2. LRFD design with the new design methodology will be implemented in the near future.
10.1.1	Notations	Corrected typographical errors and added new variables.
10.12	Flexural Members	Do not implement. Office practice uses only the15% rule for the effective flange area.
10.18.	Splices	**This section has been revised and reorganized and will not be implemented.**
10.18.1.1	Design Strength	LRFD design will be implemented in the near future.
10.18.1.2	Fillers	AASHTO allows shear strength of bolts to be reduced for fillers but Office practice does not reduce the shear strength of bolts.
10.18.1.3	Design Force for Flange Splice Plates	AASHTO recognizes that outer and inner splice plates equally share the design force if the difference in their plate areas is not greater than 10%.
10.18.1.4	Truss Chords and Column	Rename the title and removed from Article 10.18.3.2.
10.18.1.5	Bolted Web Splices	Filler plates are not required when the difference in web thicknesses is 1/16" or less.
10.18.2	Flexural Members	
10.18.2.1.1	General	Removed from Article 10.18.2.5. The word "dead-load" was added for clarification.
10.18.2.1.2	General	Removed from Article 10.18.2.1
10.18.2.1.3	General	AASHTO does not allow oversize or slotted holes in either the member or the splice plates.
10.18.2.1.4	General	AASHTO requires high-strength bolted connections in both flange and web splices to be proportioned to prevent slip during erection, etc.

Article	Description	Recommendation
10.18.2.1.5	General	Fracture may occur at the net section of tensile flange before full plastification of the section occurs. Therefore, this provision explicitly limits the flexural capacity of compact sections at bolted splices to the moment capacity at first yield.
10.18.2.1.6	General	The design of flange and web splices must be checked for both positive and negative flexure.
10.18.2.1.7	General	This provision requires two angles, one on each side of the flexural member, at bolted flange angle splices.
10.18.2.2	Flange Splices	Office practice uses 100% capacity of flange splices.
10.18.2.3	Web Splices	The method shown in the Bridge Manual for calculating design shear is more conservative than the new method at locations where applied shears are low. However, the method calculating the design moment is significantly different. It's unclear if the Bridge Manual overall is more or less conservative.
10.18.3	Compression Members	Renamed the title to better indicate that the provision applies to splices in all types of compression members.
10.18.4	Tension Members	Office practice uses 100% capacity of flange splices.
SECTION 12	*SOIL-CORRUGATED METAL STRUCTURE INTERACTION SYSTEMS*	
12.4	Corrugated Metal Pipe	
12.4.1.3	Load Factor Design-Capacity Modification Factor, ϕ	Implement. Revised to specify ϕ = 1.0 for wall area and buckling ϕ = 0.67 for seam strength
12.5	Spiral Bib Metal Pipe	
12.5.3.2	Flexibility Factor (FF)	Implement. Revised FF for 3/4x3/4x7 ½ configuration for steel and aluminum conduits.
12.5.4	Section Properties	Implement. Modified section properties tables and added a new steel conduit (0.138” in thickness).

Article	Description	Recommendation
12.6	Structural Plate Pipe Structures	
12.6.1.3	Load Factor Design-Capacity Modification Factor, ϕ	Implement. Revised to specify ϕ = 1.0 for wall area and buckling ϕ = 0.67 for seam strength
12.6.2	Seam Strength	Implement. Revised Minimum Longitudinal Seam Strengths Table to add two new steel conduits (0.318" and 0.380" thickness). (The title "12.6.2 Seam Strength" should be added. There are minor errors in the tables.)
12.6.3	Section Properties	Implement. Revised Section Properties Table to add 0.318" and 0.380" steel conduits. (The title "12.6.3.1 Steel Conduits" should be added.)
DIVISION I-A		
SECTION 4	*ANALYSIS REQUIREMENTS (SEISMIC DESIGN)*	
4.2	"Not regular" curved bridges	Implement. A "not regular" bridge is considered if a curved bridge comprised of multiple simple spans with the subtended angle in plan being greater than 20 degrees.
4.2.2	Curved bridge analyzed as a straight bridge	Implement. Exclude curved bridges comprised of multiple simple spans from this section.

Division of Bridges
Office Practice No. 1

August 9, 2001

Subject: Implementation of the 2000 Interim AASHTO Standard Specifications for Highway Bridges.

Implementation recommendations are given on the following sheets.

Plans should be marked "Design Specifications: AASHTO –1996 and Interims thru 2000" beginning with projects in February 2002 Letting.

IMPLEMENTATION OF 2000
AASHTO INTERIM SPECIFICATIONS FOR BRIDGES

The following is MoDOT's policy on implementation of the 2000 AASHTO Interim Specifications for highway bridges. Major river bridge crossings may be independent of MoDOT's policy. See Structural Liaison Engineers.

Article	Description	Recommendation
DIVISION I		
SECTION 5	*RETAINING WALLS*	
Table 5.6.2	Nongravity Cantilevered Wall Design	Implement. Corrected reference to Figures.
SECTION 7	*SUBSTRUCTURES*	
7.5.4	Abutments on MSE Walls	Implement. Corrected reference to Article 5.8.12.1.
SECTION 9	*PRESTRESSED CONCRETE*	
9.20.3.2	Prestressed Concrete Shear Reinforcement	Implement. Corrected f_c' to $\sqrt{f_c'}$.
9.28.1	Prestressed Concrete Strand Embedment	Implement. Corrected equation number to (9-42).
SECTION 10	*STRUCTURAL STEEL*	With the exception of a few noted articles, do not implement the new design methodology as described in 2000 Interim because of the following: 1. Implementation would require extensive Bridge Manual revisions such as splice tables and a change in plate girder design software. 2. LRFD design with the new design methodology will be implemented in the near future.

Article	Description	Recommendation
10.1.1	Notations	Corrected typographical errors & applicable section numbers, and added new variables. Changes in notation apply to both **implemented** and **non-implemented** sections.
Table 10.2A	Minimum Material Properties Structural Steel	Lettering of footnotes changed and references to HPS70W added. As encouraged by footnote "c", it is suggested that MoDOT bridges utilize HPS70W in lieu of 70W when 70 ksi steel is used. **Implement.**
Table 10.2B	Minimum Material Properties Pins, Rollers, and Rockers	Lettering of footnotes "a" and "b" switched. **Implement.**
10.3.1	Allowable Fatigue Stress Ranges	For fatigue stress range calculations, AASHTO now allows concrete in tension to be effective in inertial calculations if shear connector requirements are met. **Will not be implemented** because: MoDOT does not use shear connectors in negative moment regions; PC SIMON will not consider effects of concrete slab when evaluating negative bending; concrete in tension considered as effective is inconsistent with good design practice. The AASHTO rationale for allowing cracked concrete to be inertially-effective is that, under service loads, proper reinforcement of the concrete slab will sufficiently minimize crack widths.
10.3.2.1	Load Cycles	AASHTO recommends that the live load used for fatigue calculations not exceed HS20. Current MoDOT practice is to use the same design truck for all serviceability and strength criteria checks. **Do not implement.**
Tables 10.3.1A & 10.3.1B	Allowable Fatigue Stress Range	Lettering of footnotes changed. **Implement.**
10.3.4	Shear	Correction of subscript. **Implement.**
10.18	Splices	**Do not implement any of the sub-sections of 10.18 for reasons given previously.** Description of changes provided for informational purposes only.
10.18.1.1	Splices – General Design Strength	Correction in format.
10.18.1.3	Design Force for Flange Splice Plates	Correction in format.
10.18.1.4	Truss Chords and Columns	Correction in format.

Article	Description	Recommendation
10.18.1.5.	Truss Chords and Columns	Sub-section deleted because of applicability and because requirement already stated in 10.18.1.2.2.
10.18.2.2	Flange Splices	Correction in format.
10.18.2.2.1	Flange Splices	Office practice is to use 100% of flanges' capacities in splice design as stated on B.M. 3.42 2.2-1.
10.18.2.2.3	Flange Splices	Office practice is to use 100% of flanges' capacities in splice design as stated on B.M. 3.42 2.2-1.
10.18.2.3	Web Splices	Added footnote that references publications providing alternative approach for splice designs. **Footnote should be prefaced with an asterisk.**
10.18.2.3.5	Web Splices	Correction in wording.
10.18.2.3.9	Web Splices	Correction in wording.
10.18.4.1	Tension Members	Correction in format.
10.18.4.2	Tension Members.	Splice design of tension members not addressed in Bridge Manual.
10.23.2.2	Minimum Size of Fillet Welds	Correction in format of footnotes. Slight change in ranges given in table. **Implement.**
Table 10.24.2	Nominal Hole Dimension	Correction in format. **Implement.**
Table 10.32.1A	Allowable Stresses – Structural Steel	Correction in format. **Implement.**
10.32.2	Weld Metal	Correction in wording. **Implement.**
Table 10.32.3A	Allowable Stresses for Low-Carbon Steel Bolts and Power Driven Rivets	Correction in format of footnotes. **Implement.**
Table 10.32.3B	Allowable Stresses on High-Strength Bolts or Connected Material	Correction in format of footnotes. **Implement.**
10.32.3.3	Applied Tension, Combined Tension and Shear	Correction in format. **Implement.**
10.32.4.2	Pins, Rollers, and Expansion Rockers	Corrected reference to appropriate table. **Implement.**

Article	Description	Recommendation
Table 10.32.4.3A	Allowable Stresses – Steel Bars and Steel Forgings	Correction in format of footnotes. **Implement.**
10.34 10.36 10.38 10.39 10.40	Plate Girders Combined Stresses Composite Girders Composite Box Girders Hybrid Girders	**Do not implement any of the changes in sub-sections of 10.34, 10.36, 10.38, 10.39 and 10.40, except as noted, for reasons given previously and other reasons given for specific sub-sections.** Changes will have little or no effect as MoDOT does not use the "Allowable Stress Design" method for plate girders. Description of changes provided for informational purposes only.
10.34.2.1	Welded Girders	Guidelines provided for relative dimensions of compression flanges, webs, and tension flanges.
10.34.2.1.5	Welded Girders	b/t ratio changed to be "more equivalent" to "Load Factor Design" check.
10.34.2.2.4	Riveted or Bolted Girders	b/t ratio changed to be "more equivalent" to "Load Factor Design" check.
10.34.3.2	Girders Stiffened Longitudinally	Correction in calculation of 'k' to ensure consistency with theoretical derivation and other relevant AASHTO sections.
10.34.4.7	Transverse Intermediate Stiffeners	Correction in wording relating to transverse stiffener inertial requirements. Correction in equation relating to transverse stiffener area requirements. **Note: AASHTO section should clearly indicate when area requirement is to be met. Area requirement is only applicable when transverse stiffener acts as "truss member" when tension field action is utilized.**
10.34.5.2	Longitudinal Stiffeners	Correction in reference to the structural element (longitudinal stiffener) to be considered in thickness check. Thickness check changed to be "more equivalent" to "Load Factor Design" check.
10.34.5.5	Longitudinal Stiffeners	Correction in wording as there is no theoretical basis for using the subpanel depth.
10.34.5.6	Longitudinal Stiffeners	Correction in wording as there is no theoretical basis for using the subpanel depth.
Table 10.36A	Bending – Compression Interaction Coefficients	Correction in equation.

Article	Description	Recommendation
10.38.1.6	Composite Girders	For fatigue stress & shear range calculations, AASHTO now allows concrete in tension to be effective in inertial calculations if shear connector requirements are met. The AASHTO rationale for allowing cracked concrete to be inertially-effective is that, under service loads, proper reinforcement of the concrete slab will sufficiently minimize crack widths.
10.38.1.7	Composite Girders	Checks were changed to be "more equivalent" to "Load Factor Design" checks.
10.38.4.3	Stresses (in Composite Girders)	Correction in wording regarding placement of additional longitudinal slab steel in areas where cracking of concrete can occur. Thermal and shrinkage effects, moving live loads, and certain slab pouring sequences may cause tension stresses in regions not normally anticipated (i.e. outside the points of dead-load contraflexure).
10.38.5.1.1	Fatigue (due to Horizontal Shear)	For fatigue stress range calculations, AASHTO now allows concrete in tension to be effective in inertial calculations if shear connector requirements are met. Will not be implemented because: MoDOT does not use shear connectors in negative moment regions; PC SIMON will not consider effects of concrete slab when evaluating negative bending; concrete in tension considered as effective is inconsistent with good design practice. The AASHTO rationale for allowing cracked concrete to be inertially-effective is that, under service loads, proper reinforcement of the concrete slab will sufficiently minimize crack widths. Clarified that pitch of spacing determined in fatigue check is not to exceed that specified in 10.38.5.1.
10.38.5.1.2	Ultimate Strength (of Shear Connectors)	Correction of symbols. Added upper bound for ultimate capacity of welded stud. **Implement.**
10.39.4.2	Compression Flanges Unstiffened (of Composite Box Girders)	Check was changed to be "more equivalent" to "Load Factor Design" check.
10.39.4.2.6	Compression Flanges Unstiffened (of Composite Box Girders)	Sub-section added to address shear lag effects in compression flanges similar to requirements in tension flanges.
10.39.4.3.7	Compression Flanges Stiffened Longitudinally (of Composite Box Girders)	Sub-section added to address shear lag effects in compression flanges similar to requirements in tension flanges.

Article	Description	Recommendation
10.39.4.4.9	Compression Flanges Stiffened Longitudinally and Transversely	Sub-section added to address shear lag effects in compression flanges similar to requirements in tension flanges.
10.40.2.1.3 & 10.40.2.1.4	Allowable Stresses (Bending in Hybrid Girders)	Sub-sections added. Clarified that when web yielding does not occur, hybrid factor R is not applicable. Longitudinal stiffeners are to be placed in web locations where yielding does not occur so as to avoid yielding in the stiffener.
10.40.2.2	Shear (in Hybrid Girders)	Correction in wording to clarify that yield strength of web steel is the variable to be considered.
10.40.2.3	Fatigue (in Hybrid Girders)	Correction in wording.
10.40.3	Plate Thickness Requirements	Correction in wording. Eliminated reference to local buckling check for web (10.34.3). Clarified that f_b is not to be taken as greater than the allowable bending stress in that flange.
10.45 10.48 10.49 10.50 10.51 10.53 10.54 10.56 10.57 10.61	Assumptions Flexural Members Singly Symmetric Sections Composite Sections Composite Box Girders Hybrid Girders Compression Members Splices, Connections, and Details Overload Constructibility	**Do not implement any of the sub-sections of 10.45, 10.48, 10.49, 10.50, 10.51, 10.53, 10.54, 10.56, 10.57 and 10.61 for reasons given previously and other reasons given for specific sub-sections.**
10.45.4	Assumptions (of Structural Analysis)	Added language referring to sub-sections (10.57.2, 10.58.1 & 10.58.2.2) allowing the effects of cracked concrete to be considered.
10.48	Flexural Members	Re-wording of title as to avoid confusion associated with "symmetric" terminology. Clarified that Articles 10.49 through 10.61 may supersede 10.48. Guidelines provided for relative dimensions of compression flanges, webs, and tension flanges.
10.48.1	Compact Sections	Clarified that compact sections must be constant depth, without longitudinal stiffeners, 'properly braced', and without holes in the tension flange. Sufficient research hasn't been conducted on other member types and can't be considered compact.

Article	Description	Recommendation
10.48.1.1	Compact Sections	Change in b/t ratio; b is now compression flange width instead of projecting flange element (i.e. approx. ½ of flange width). Change in terminology associated with spacing of lateral bracing.
10.48.1.2	Compact Sections	Added reference to HPS70W and terminology associated with steels able to demonstrate inelastic behavior.
Table 10.48.1.2A	Limitations for Compact Sections	Updated values for change in compression flange b/t and for 70 ksi steel.
10.48.1.3	Compact Sections	Added language stating that negative moment regions utilizing 70 ksi steel are not allowed the 10% redistribution of moment. Added language to clarify that only the negative moment section must be compact, not the entire beam, for redistribution of moment to be an option.
10.48.2	Braced Non-Compact Sections	Added equation and variables to better define a section's strength as the lesser of two capacities based on each flange.
10.48.2.1	Braced Non-compact Sections	Check for compression flange b/t was changed to be "more equivalent" to "Allowable Stress Design" check, Eq. 10-19. Check for web thickness was eliminated since this criterion is adequately addressed in other sub-sections. Check for spacing of lateral bracing for compression flange clarifies that if requirement is not met, strength of section is to be based on other sub-section.
Table 10.48.2.1A	Limitations for Braced Noncompact Sections	Updated values for changes outlined in 10.48.2.1.
10.48.3	Transitions	Change in terminology.
10.48.4	Partially Braced Members	Changed terminology from "Unbraced Sections" to "Partially Braced Members" since all girders will have bracing of some kind. Qualitative guidance is provided as to what constitutes bracing and reference is given to 10.48.4.1 that does quantify the effect of bracing on the section's flexural strength.
10.48.4.1	Partially Braced Members	Correction in wording, format, equations and variables to better define the predicted structural behavior of this type of section.
10.48.5.1	Transversely Stiffened Girders	Added reference to applicable sub-section and added language to clarify how to meet section's requirements.

Article	Description	Recommendation
10.48.5.2	Transversely Stiffened Girders	Added references to applicable sub-sections.
10.48.5.3	Transversely Stiffened Girders	Correction in wording relating to transverse stiffener inertial requirements. Correction in format and addition of variable definition. Correction in equation relating to transverse stiffener area requirements. **Note: AASHTO section should clearly indicate when area requirement is to be met. Area requirement is only applicable when transverse stiffener acts as "truss member" when tension field action is utilized.**
10.48.6.1	Longitudinally Stiffened Girders	Added reference to applicable sub-section.
10.48.6.2	Longitudinally Stiffened Girders	Addition of references and correction of a reference to other applicable sub-sections.
10.48.6.3	Longitudinally Stiffened Girders	Correction of and addition of references to other applicable sub-sections. Correction in wording as there is no theoretical basis for using the subpanel depth. Deleted reference to location of longitudinal stiffener (D/5) since stiffener could be placed elsewhere along the depth of the web.
10.48.8.1	Shear	Correction in wording. **AASHTO should change "shall" to "may" in regards to the utilization of tension-field action.**
10.48.8.2	Shear	Correction in wording. Addition of wording to clarify what ratio (bending capacity, stress levels, etc.) is to be used in shear-moment interaction equation.
10.48.8.3	Shear	A correction in punctuation, a revision in wording and the deletion of references to subpanel depths.
10.49	Singly Symmetric Sections	A revision in wording.
10.49.1	Singly Symmetric Sections (General)	A revision in wording.
10.49.2	Singly Symmetric Sections with Transverse Stiffeners	A revision in wording and added language to clarify how to meet section's requirements.
10.49.3	Longitudinally Stiffened Singly Symmetric Sections	A revision in wording.
10.49.3.1	Longitudinally Stiffened Singly Symmetric Sections	A revision in wording.

Article	Description	Recommendation
10.49.3.2	Longitudinally Stiffened Singly Symmetric Sections	A revision in wording.
10.49.4	Singly Symmetric Braced Non-Compact Sections	A revision in wording and correction in reference to applicable sub-section.
10.49.5	Partially Braced Members with Singly Symmetric Sections	A revision in wording and language added to be consistent with revisions to preceding sub-sections.
10.50	Composite Sections	A revision in wording.
10.50.1	Positive Moment Sections	A revision in wording.
10.50.1.1	Compact Sections	Added reference to HPS70W, revised wording, and language added to be consistent with revisions to preceding subsections.
10.50.1.1.1	Compact Sections	A revision in wording and change in format for equations. **AASHTO should change page reference from 285 to 284.**
10.50.1.1.2	Compact Sections	A revision in wording and format. Language added to clarify that compact sections must be constant depth, without longitudinal stiffeners, 'properly braced', and without holes in the tension flange. Sufficient research hasn't been conducted on other member types and can't be considered compact. These other section types are to be in accordance with previous sub-sections. Added information about variable to be used with 70 ksi steel.
10.50.1.2	Non-Compact Sections	A revision in format.
10.50.1.2.1	Non-Compact Sections	Language added to clarify that the maximum flexural strength of non-compact sections is in terms of stresses rather than moments. Added language to clarify that a section's strength is the lesser of two capacities based on each flange.
10.50.2	Negative Moment Sections	A revision in format. Wording revised to more-correctly reference applicable sub-sections.
10.50.2.1	Compact Sections	A revision in wording and format. Language added to clarify that compact sections must be constant depth, without longitudinal stiffeners, 'properly braced', and without holes in the tension flange. Sufficient research hasn't been conducted on other member types and can't be considered compact. These other section types are to be in accordance with previous sub-sections. Added reference to 70 ksi steel.

Article	Description	Recommendation
10.50.2.2	Non-Compact Sections	A revision in format. Language added to clarify that the maximum flexural strength of non-compact sections is in terms of stresses rather than moments. Added language to clarify that a section's strength is the lesser of two capacities based on each flange.
10.50.2.3	Negative Moment Sections	Correction in wording regarding placement of additional longitudinal slab steel in areas where cracking of concrete can occur. Thermal and shrinkage effects, moving live loads, and certain slab pouring sequences may cause tension stresses in regions not normally anticipated (i.e. outside the points of dead-load contraflexure).
10.51.5.4.4	Compression Flanges (of Composite Box Girders)	Added language recommending that the number of longitudinal stiffeners not exceed two.
10.51.5.6	Compression Flanges (of Composite Box Girders)	Sub-section added to address shear lag effects in compression flanges similar to requirements in tension flanges.
10.51.7	Design of Flange to Web Welds (of Composite Box Girders)	Sub-section added to be consistent with format and requirements outlined in 10.39.5 for "Allowable Stress Design".
10.53	Hybrid Girders	Correction of and addition of references to other applicable sub-sections. Longitudinal stiffeners are to be placed in web locations where yielding does not occur so as to avoid yielding in the stiffener.
10.53.1	Non-Composite Hybrid Sections	A revision in format.
10.53.1.1	Compact Sections	A revision in wording.
10.53.1.2	Braced Non-Compact Sections	A revision in format. Added an equation to better define a section's strength as the lesser of two capacities based on each flange. Clarified that when web yielding does not occur, hybrid factor R is not applicable.
10.53.1.3	Partially Braced Members	Changed terminology from "Unbraced Noncompact Sections" to "Partially Braced Members" since all girders will have bracing of some kind. References are given to applicable sub-sections that quantify the effect of bracing on the section's flexural strength.
10.53.2	Composite Hybrid Sections)	A revision in wording. References are given to applicable sub-sections and variables that are to be used to quantify a section's flexural strength.

Article	Description	Recommendation
10.54.1.1	Maximum Capacity (of Compression Members)	Added asterisk referring to footnote.
10.54.1.2	Effective Length (of Compression Members)	Added double asterisk referring to footnote. Added footnote providing additional reference.
10.54.2.2	Equivalent Moment Factor C	Correction in equation.
10.56.1.3.3	Bolts and Rivets	Corrected reference to applicable table.
Table 10.56A	Design Strength of Connections	A revision in format and correction in wording.
10.57	Overload	Language added to clarify the definition of overload. Moment redistribution, applicable to both non-composite and composite sections, is addressed. Added language to ensure conformance of web dimensions to applicable sub-sections.
10.57.1	Non-Composite Sections	A revision in format. Language previously in this section that may be applicable to composite sections, was moved to 10.57.
10.57.2	Composite Sections	A revision in format. Language previously in this section that may be applicable to non-composite sections, was moved to 10.57. For overload flange stress calculations, AASHTO now allows concrete in tension to be effective in inertial calculations if shear connector requirements are met. Will not be implemented because: MoDOT does not use shear connectors in negative moment regions; PC SIMON will not consider effects of concrete slab when evaluating negative bending; concrete in tension considered as effective is inconsistent with good design practice. The AASHTO rationale for allowing cracked concrete to be inertially-effective is that, under service loads, proper reinforcement of the concrete slab will sufficiently minimize crack widths.
10.57.3.3	Slip-Critical Joints	Correction in format.

Article	Description	Recommendation
10.58.1	Fatigue	For fatigue stress range calculations, AASHTO now allows concrete in tension to be effective in inertial calculations if shear connector requirements are met. Will not be implemented because: MoDOT does not use shear connectors in negative moment regions; PC SIMON will not consider effects of concrete slab when evaluating negative bending; concrete in tension considered as effective is inconsistent with good design practice. The AASHTO rationale for allowing cracked concrete to be inertially-effective is that, under service loads, proper reinforcement of the concrete slab will sufficiently minimize crack widths
10.61	Constructibility	Editorial correction in variable.
10.61.1	Web Bend Buckling	Correction in equation. Correction in calculation of 'k' to ensure consistency with theoretical derivation and other relevant AASHTO sections. Added language giving guidance on where to locate longitudinal stiffener on web in order to meet other applicable sub-sections. Clarified which sub-sections are not applicable for constructibility check.
10.61.4	Compression Flange Local Buckling	Change in b/t ratio; b is now compression flange width instead of projecting flange element (i.e. approx. ½ of flange width). Language added to clarify how to calculate f_{dl}.
SECTION 12	*SOIL-CORRUGATED METAL STRUCTURE INTERACTION SYSTEMS*	
12.4	Corrugated Metal Pipe	
12.4.4	Chemical and Mechanical Requirements	
12.4.4.1	Aluminum pipe	Implement. Revised Mechanical Properties Table as per AASHTO Material Specification M197-00.
12.5	Spiral Rib Metal Pipe	
12.5.5.2	Chemical and Mechanical Requirements	Implement. Revised Mechanical Properties Table as per AASHTO Material Specification M197-00.

Article	Description	Recommendation
12.6	Structural Plate Pipe Structures	
12.6.2	Seam Strength	Implement. Corrected error.
SECTION 14	*BEARINGS*	
14.5.3.2	General Requirements for Bearings - Bending Moment	Implement. Added an equation for calculating the effective modulus of elastomeric bearing in compression.
14.6.2.1	PTFE Surface	Implement. Changed the ASTM designation of pure virgin PTFE resin to ASTM D 4894 and D 4895.
14.6.4.1	Pot Bearings – General Information	Implement. Added requirement for minimum vertical load on a pot bearing: should not be less than 20% of the vertical design load.
14.6.5.3.3	Steel Reinforced Elastomeric Bearings,Method B – Compressive Deflection	**Do Not Implement**. Added a “maximum relative deflection of 1/8” across a joint is preferred.” Will not implement until Bridge Manual revisions are made.
14.6.5.3.6	Steel Reinforced Elastomeric Bearings,Method B – Stability	Implement. Added a more thorough description of the following equations and corrected typographical errors.
14.6.6.3.3	Elastomeric Pads & Steel Reinforced Elastomeric Bearings,Method A - Compressive Deflection	Implement. Added provisions stating deflection in CDP bearings need not be investigated and deflection in PEP and FGP bearings can be estimated at 3 and 1.5 times the deflection estimated for steel reinforced bearings of the same shape factor in Article 14.6.5.3.3, respectively.
SECTION 17	*SOIL-REINFORCED CONCRETE STRUCTURE INTERACTION SYSTEMS*	
17.1.2	Notations	Implement. Changed Service Load Moment, M_s, from being sign dependant to an absolute value for design equations. Also, notations are referenced to articles relating to new crack control criteria.

Article	Description	Recommendation
17.6.4.7 17.7.4.7 & 17.8.5.7	Crack Control For CIP-RC Box,Precast Box & Three Sided Structures	Implement. Introduced service load stress equation considering the effects of axial loads.
SECTION 18	*SOIL-THERMOPLASTIC PIPE INTERACTION SYSTEMS*	
18.4 18.4.2.1	Plastic Pipe Section Properties	Implement. *This item will be implemented in a future quarterly update to the Missouri Standard Plans for Highway Construction.* Revised notes to specify that use the long-term tensile strength for 42” and 48” pipe.
18.4.3.1.2	Chemical and Mechanical Requirements	Implement. Revised note to add environmental stress crack resistance evaluation. The change was recommended as a result of work done under NCHRP project 4-24 as reported in NCHRP Report 429 to address environmental stress cracking in AASHTO M294-98 polyethylene culverts.

Division of Bridges
Office Practice No. 1

May 16, 2002

Subject: Implementation of the 2002 Interim AASHTO Standard Specifications for Highway Bridges.

Implementation recommendations are given on the following sheets.

Plans should be marked “Design Specifications: AASHTO - 1996 and Interims thru 2002” beginning with projects in December 2002 Letting.

IMPLEMENTATION OF 2002
AASHTO INTERIM SPECIFICATIONS FOR BRIDGES

The following is MoDOT's policy on implementation of the 2002 AASHTO Interim Specifications for highway bridges. Major river bridge crossings may be independent of MoDOT's policy. See Structural Liaison Engineers.

Article	Description	Recommendation
DIVISION I - DESIGN		
SECTION 10	STRUCTURAL STEEL	**Do not implement** as per 2000 Interim Implementation Recommendation: *"With the exception of a few noted articles, do not implement the new design methodology as described in 2000 Interim because of the following:* *1. Implementation would require extensive Bridge Manual revisions such as splice tables and a change in plate girder design software.* *2. LRFD design with the new design methodology will be implemented in the near future."*
10.1.1	Notations	Added reference to Table 10.2A for F_u. **Implement.**
Table 10.2A	Minimum Material Properties - Structural Steel	Adopted AASHTO Material Designation "AASHTO M270 Grade HPS70W" for high-performance steel in Table 10.2A and footnote c. **Implement.**
10.15	Heat-curved Rolled Beam and Welded Plate Girders	
10.15.1	Scope	Revised the last sentence to allow Grade HPS70W steel to be heat-curved for horizontal curvature. **Implement.**
10.18	Splices	**Do not implement** as per 2000 Interim Implementation Recommendation: *"Do not implement any of the sub-sections of 10.18 for reasons given previously."* Description of changes provided for informational purposes only.
10.18.2.2.3	Flange Splices	Corrected a typographical error. Changed from "D+(L+1)" to "D+(L+I)".
10.18.2.3.1	Web Splices	Corrected typographical errors in the footnote.

Article	Description	Recommendation
10.18.2.3.8	Web Splices	Correction in Equation (10-4v).
10.18.2.3.9	Web Splices	Corrected a typographical error. Changed from “D+(L+1)” to “D+(L+I)”.
10.18.4.2	Tension Members	Corrected a typographical error. Changed from “D+(L+1)” to “D+(L+I)”.
Table 10.32.1A	Allowable Stresses – Structural Steel	Added high-performance steel designations “AASHTO M270 Grade HPS70W” and “ASTM A709 Grade HPS70W” in Table 10.32.1A. **Implement.**
SECTION 10 PART C – ALLOWABLE STRESS DESIGN METHOD		
10.39	Composite Box Girders	**Do not implement** as per 2000 Interim Implementation Recommendation: *“Do not implement for reasons given previously. Changes will have little or no effect, as MoDOT does not use the Allowable Stress Design method for plate girders.”*
10.39.4.3.3	Compression Flanges Stiffened Longitudinally	Minor correction in Equation (10-78).
SECTION 10 PART D – LOAD FACTOR DESIGN METHOD		
10.48 10.50 10.53 10.56	Flexural Members Composite Sections Hybrid Girders Splices, Connections	**Do not implement** as per 2000 Interim Implementation Recommendation. Description of changes provided for informational purposes only.
10.48.2.1(b)	Web Thickness	Corrected a typographical error in the last sentence.
10.48.6.3	Longitudinally Stiffened Girders	Added designation of “I” in Equation (10-110).
10.50.1	Positive Moment Sections	
10.50.1.1	Compact Sections	Added reference to AASHTO M270 Grade HPS70W.
10.50.1.1.1(c)		Revised wording for compressive force C’ in top portion of steel section to refer to Equation (10-126) (shown on page 285).

Article	Description	Recommendation
10.53.1 (10.53.1.4)	Non-Composite Hybrid Sections	Rearranged subsections in 10.53 to change the subsection's number and title from "10.53.1.4 Transversely Stiffened Girder" to "10.53.3 Shear".
10.53.3	Shear	The specifications in 10.53.3 should be applied to both composite (10.53.2) and non-composite (10.53.1) hybrid sections.
10.56.1	Connections	
10.56.1.4	Slip-Critical Joint	Revised wording and corrected reference to Article 10.56.1.3.
SECTION 12	SOIL-CORRUGATED METAL STRUCTURE INTERACTION SYSTEMS	
12.8	Structural Plate Box Culverts	
12.8.4.3.1	Plastic Moment Requirements	Correction in Equation (12-12). Implement.
SECTION 14	BEARINGS	
14.3	Notations	Revised the definition of "n", the number of interior layers of elastomer. Implement.
14.6.5	Steel Reinforcement Elastomeric Bearings - Method B	Revision in 14.6.5 will have little or no effect, as MoDOT does not use the "Method B" for bearing design.
14.6.5.3.2	Compressive Stress	Minor corrections in Equations (14.6.5.3.2-1) and (14.6.5.3.2-2). Implement.
14.6.5.3.5	Combined Compression and Rotation	Revised the definition of "n", the number of interior layers of elastomer. Implement.

Article	Description	Recommendation
14.6.6	Elastomeric Pads & Steel Reinforced Elastomeric Bearings - Method A	**Do not implement the new rotational requirement for Steel Reinforced Elastomeric Bearings as described in 2002 Interim Article 14.6.6.3.5b because of the following:** **1. Implementation would require revision for Section 3.31.2 of Bridge Manual;** **2. LRFD design with the new rotational requirement will be implemented in the near future.**
14.6.6.3.5	Rotation Requirement	Rearranged subsection 14.6.6.3.5 with new 14.6.6.3.5a and 14.6.6.3.5b.
14.6.6.3.5a	PEP and CDP	Renumbered equations from (14.6.6.3.5-1), (14.6.6.3.5-2) to (14.6.6.3.5a-1), (14.6.6.3.5a-2) for PEP and CDP bearings. Implement
14.6.6.3.5b	FGP and Steel Reinforcement Elastomeric Bearings	**Do not implement the subsection 14.6.6.3.5b for reasons given above.** Description of changes provided for informational purposes only. Added rotation requirement for FGP and Steel Reinforcement Elastomeric bearings with new equations (14.6.6.3.5b-1) and (14.6.6.3.5b-2) to calculate the compressive stress for one interior layer of elastomer.
DIVISION II - CONSTRUCTION		
SECTION 11	STEEL STRUCTURE	
11.4	Fabrication	
11.4.13	Orthotropic – Deck Superstructures	
11.4.13.3	Straightness of Longitudinal Stiffeners	Correction in wording (changed wording from “transverse web” to “longitudinal web”). Implement.
SECTION 18	BEARINGS	
18.4	Materials	
Table 18.4.3.1.1	Physical Properties of PTFE	Revised ASTM Test Method references in the Table. Added a footnote for using ASTM Test Method SATM D638. Implement.

Division of Bridges
Office Practice No. 1

February 28, 2003

Subject: Implementation of the 2002 AASHTO 17th Edition Standard Specifications for Highway Bridges.

Implementation recommendations are given on the following sheets.

Plans should be marked "Design Specifications: 2002 AASHTO 17th Edition" beginning with projects in July 2003 Letting.

IMPLEMENTATION OF 2002 AASHTO 17th EDITION STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES

The following is MoDOT's policy on implementation of the 2002 AASHTO 17th Edition Specifications for highway bridges. Major river bridge crossings may be independent of MoDOT's policy. See Structural Liaison Engineers.

Article	Description	Recommendation
DIVISION I - DESIGN		
SECTION 10	STRUCTURAL STEEL	**Do not implement** as per 2002 Interim Implementation Recommendation: *"With the exception of a few noted articles indicated in previous Office Practices, do not implement the new design methodology as described in 2000 Interim because of the following:* *1. Implementation would require extensive Bridge Manual revisions such as splice tables and a change in plate girder design software.* *2. LRFD design with the new design methodology will be implemented in the near future."*
14.6.6	Elastomeric Pads & Steel Reinforced Elastomeric Bearings - Method A	**Do not implement the new rotational requirement for Steel Reinforced Elastomeric Bearings as described in 2002 Interim Article 14.6.6.3.5b because of the following:** *1. Implementation would require revision for Section 3.31.2 of Bridge Manual;* *2. LRFD design with the new rotational requirement will be implemented in the near future.*
14.6.6.3.5b	FGP and Steel Reinforcement Elastomeric Bearings	**Do not implement the subsection 14.6.6.3.5b for reasons given above.** Description of changes provided for informational purposes only. Rotation requirement for FGP and Steel Reinforcement Elastomeric bearings with new equations (14.6.6.3.5b-1) and (14.6.6.3.5b-2) to calculate the compressive stress for one interior layer of elastomer.